

Remarks/Arguments:

Amendments

Claims 37, 47, 59, 66 have been amended to induce conventional claim terminology and to particularly point out and distinctly claim the subject matter that applicants regard as the invention. In addition, the limitations of claim 44 have been incorporated into claim 37, and claim 44 canceled. Claim 41 has been amended as required by the amendment to claim 37, on which it is dependent. Claim 47 has been rewritten in independent form, incorporating the limitations of claim 37, on which it depended. The limitations of claim 73 have been incorporated into claim 66, and claim 73 canceled. Claim 70 has been amended as required by the amendment to claim 66, on which it is dependent. Claim 76 has been rewritten in independent form, incorporating the limitations of claim 66, on which it depended. Support for new claims 83 and 85 is found in original claim 69 and on page 9, lines 25 to 27. Support for new claim 84 is found in original claims 52 and 59. Support for new claims 86 and 87 is found on page 5, lines 12-13, and on page 7, lines 22-23. It is submitted that no new matter is introduced by these amendments and new claims.

First Rejection under 35 USC 102(b)

Claims 66, 69, 70, 73, and 76 were rejected as anticipated by Fushiki, U.S. Patent 4,572,859 ("Fushiki") as evidenced by Paper on Web. Claim 73 has been canceled. Claim 76 has been rewritten in independent form.

Claims 66, 69, and 70

Fushiki discloses an electrical laminate comprising a plurality of fibrous cellulosic substrate layers and alternately interposed layers of cured epoxy or unsaturated polyester resin between the adjacent substrate layers. Fushiki, Abstract.

As amended, independent claim 66 recites, among other limitations, that the fiber sheet comprises a first layer and a second layer, and the density of the second layer is different from the density of the first layer. This is described on page 8, lines 3-8 of the specification.

When resin is impregnated into the fiber sheet, the center section of the fiber sheet is not impregnated well with the resin, but the surface of the fabric sheet is easily impregnated

with the resin. Specification, page 8, lines 3-8. This produces a fiber sheet that has a surface layer and a center layer of differing density. See, Figure 2A and Figure 2B.

The Office asserts that a foil, fiber, fiber, foil structure meets this limitation. Office action, page 6, lines 3-7. This assertion is respectively traversed. The Office has misread this limitation. This is not the same as placing a layer of resin or other material, such as a foil, which does not impregnate the fiber sheet, on top of the fiber sheet. The fiber sheet itself includes the two layers so a layer external to the fiber sheet does not satisfy this limitation.

Fushiki does not disclose this feature of claim 66. Fushiki merely discloses that the cellulosic substrate is impregnated with resin. Fushiki, column 6, lines 8-17. An "excessive amount" is used. *Id.*, column 6, lines 38-44.

Anticipation requires that each and every limitation of the claim be disclosed, either expressly or under principles of inherency, in a single prior art reference. *In re Robertson*, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). Absence from the reference of any claimed limitation negates anticipation. *Rowe v. Dror*, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997). Fushiki does not disclose a fiber sheet that comprises a first layer and a second layer, in which the density of the second layer is different from the density of the first layer. Therefore, the rejection of claim 66, and of claims 69 and 70, dependent thereon, as anticipated by Fushiki should be withdrawn.

In addition, independent claim 66 recites that the resin material comprises at least one of a thermoplastic resin and a thermoplastic resin having a semi-cured portion. This limitation is not disclosed by Fushiki. Fushiki discloses layers of a cured resin selected from the group consisting of epoxy resin and unsaturated polyester resin. Fushiki, column 2, lines 1-5, and lines 38-44; and column 6, lines 19-37. For this additional reason the rejection of claims 66, 69, and 70 as anticipated by Fushiki should be withdrawn.

Claim 76

Independent claim 76 recites, among other limitations, first and second layers disposed at respective outermost sides of the fiber sheet; and a third layer located between the first and second layers, having a density lower than respective densities of the first and second layers. That is, a fiber sheet that has at least three layers, two side layers and a center layer, in which the center layer has a lower density than the side layers. See, Figure 2A and Figure 2B.

The Office asserts that a foil, fiber, fiber, foil structure meets the first layer, fiber layer, third layer, second layer structure with associated differences in densities. Office action, page 6, lines 3-7. This assertion is respectively traversed.

The Office has misread the limitation. The fiber sheet, itself, includes the three layers. The first and second layers are disposed at, not on, the sides of the fiber sheet. Therefore, contrary to the Office assertion, does this structure not meet the structure with associated differences in densities.

Consequently, Fushiki does not disclose this feature of claim 76. Absence from the reference of any claimed limitation negates anticipation. Fushiki does not disclose a fiber sheet having first and second layers disposed at respective outermost sides of the fiber sheet; and a third layer located between the first and second layers, having a density lower than respective densities of the first and second layers. Therefore, the rejection of claim 76 as anticipated by Fushiki should be withdrawn.

In addition, independent claim 76 recites that the resin material comprises at least one of a thermoplastic resin and a thermoplastic resin having a semi-cured portion. This limitation is not disclosed by Fushiki. Fushiki discloses layers of a cured resin selected from the group consisting of epoxy resin and unsaturated polyester resin. Fushiki, column 2, lines 1-5, and lines 38-44; and column 6, lines 19-37. For this additional reason the rejection of claim 76 as anticipated by Fushiki should be withdrawn.

Second Rejection under 35 USC 102(b)

Claims 66, 70, 73, and 76 were rejected as anticipated by Yoshimitsu, U.S. Patent 5,120,384 ("Yoshimitsu") as evidenced by Van de Velde, Composite Structures (November-December, 2001) 54: 355-360. Claim 73 has been canceled.

Claims 66, 69, and 70

Yoshimitsu a method for manufacturing multilayer laminates. Yoshimitsu, Abstract.

As discussed above, independent claim 66 recites, among other limitations, that the fiber sheet comprises a first layer and a second layer, and the density of the second layer is different from the density of the first layer.

Yoshimitsu does not disclose this feature of claim 66. Yoshimitsu forms glass fibers into a mat and dips the mat in a solution of the binder to form the impregnated binder. Yoshimitsu, column 7, lines 4-8.

Absence from the reference of any claimed limitation negates anticipation. Yoshimitsu does not disclose a fiber sheet that comprises a first layer and a second layer, in which the density of the second layer is different from the density of the first layer. Therefore, the rejection of claim 66, and of claims 69 and 70, dependent thereon, as anticipated by Yoshimitsu should be withdrawn.

In addition, independent claim 66 recites that the resin material comprises at least one of a thermoplastic resin and a thermoplastic resin having a semi-cured portion. This limitation is not disclosed by Yoshimitsu. For this additional reason the rejection of claims 66, 69, and 70 as anticipated by Yoshimitsu should be withdrawn.

Claim 76

As discussed above, independent claim 76 recites, among other limitations, first and second layers disposed at respective outermost sides of the fiber sheet; and a third layer located between the first and second layers, having a density lower than respective densities of the first and second layers. That is, the fiber sheet that has three layers, two side layers and a center layer, of in which the center layer has a lower density than the side layers.

Yoshimitsu does not disclose this feature of claim 76. Absence from the reference of any claimed limitation negates anticipation. Yoshimitsu does not disclose a fiber sheet having first and second layers disposed at respective outermost sides of the fiber sheet; and a third layer located between the first and second layers, having a density lower than respective densities of the first and second layers. Therefore, the rejection of claim 76 as anticipated by Yoshimitsu should be withdrawn.

In addition, independent claim 76 recites that the resin material comprises at least one of a thermoplastic resin and a thermoplastic resin having a semi-cured portion. This limitation is not disclosed by Yoshimitsu. For this additional reason the rejection of claim 76 as anticipated by Yoshimitsu should be withdrawn.

First Rejection under 35 USC 103(a)

Claims 37, 40, 41, and 44 were rejected as unpatentable over Fushiki in view of Taneda, U.S. Patent 5,263,243 ("Taneda"), as evidenced by "New Types of Polymer Particles," Sigma-Aldrich, Analytix, May 2001 ("Aldrich"). The limitations of claim 44 have been incorporated into claim 37, and claim 44 canceled.

The Office admits that Fushiki does not disclose the use of conductive paste to fill the holes in the laminate. Office action, page 5, lines 9-10. Taneda was cited for this disclosure. The Office has not alleged that Taneda discloses either of the two features, discussed above, that are missing from the disclosure of Fushiki, namely:

- 1) the fiber sheet comprises a first layer and a second layer, and the density of the second layer is different from the density of the first layer; and
- 2) the resin material comprises at least one of a thermoplastic resin and a thermoplastic resin having a semi-cured portion.

Both of these limitations are recited by amended independent claim 37.

The Office has not alleged that the second limitation is disclosed or suggested by Fushiki, Taneda, or the combination thereof.

As discussed above, the fiber sheet, itself, includes the two layers. Consequently, a foil, fiber structure does not meet this limitation.

The Office has not made the *prima facie* case. Combination of the references in the manner indicated by the Office does not produce applicants' invention because at least two limitations are missing from the combination. Therefore, the rejection of claim 37, and claims 40 and 41, dependent thereon, as unpatentable over Fushiki in view of Taneda, as evidenced by Aldrich, should be withdrawn.

Second Rejection under 35 USC 103(a)

Claims 37, 40, 41, 44, 47, and 59 were rejected as unpatentable over Fushiki in view of Nakatani, U.S. Patent 6,096,411 ("Nakatani"). The limitations of claim 44 have been

incorporated into claim 37, and claim 44 canceled. Claim 47 has been rewritten in independent form.

Claims 37, 40, 41, and 59

The Office admits that Fushiki does not disclose the use of conductive paste to fill the holes in the laminate. Office action, page 6, lines 7-8. Nakatani was cited for this disclosure. Office action, page 6, lines 9-15. The Office has not alleged that Nakatani discloses either of the two features, discussed above, that are missing from the disclosure of Fushiki, namely:

- 1) the fiber sheet comprises a first layer and a second layer, and the density of the second layer is different from the density of the first layer; and
- 2) the resin material comprises at least one of a thermoplastic resin and a thermoplastic resin having a semi-cured portion.

The Office has not alleged that the second limitation is disclosed or suggested by Fushiki, Nakatani, or the combination thereof.

As discussed above, the fiber sheet, itself, includes the two layers. Consequently, a foil, fiber structure does not meet this limitation.

The Office has not made the *prima facie* case. Combination of the references in the manner indicated by the Office does not produce applicants' invention because at least two limitations are missing from the combination. Therefore, the rejection of independent claim 37, and claims 40, 41, and 59, dependent thereon as unpatentable over Fushiki in view of Nakatani, should be withdrawn.

Claims 47

Independent claim 47 recites, among other limitations, first and second layers disposed at respective outermost sides of the fiber sheet; and a third layer located between the first and second layers, having a density lower than respective densities of the first and second layers. As discussed above, this limitation is not disclosed by Fushiki.

The Office has not made the *prima facie* case. Combination of the references in the manner indicated by the Office does not produce applicants' invention because, as discussed

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above, at least two limitations are missing from the combination. Therefore, the rejection of independent claim 47 as unpatentable over Fushiki in view of Nakatani, should be withdrawn.

Conclusion

It is respectfully submitted that the claims are in condition for immediate allowance and a notice to this effect is earnestly solicited. The Examiner is invited to phone applicants' attorney if it is believed that a telephonic or personal interview would expedite prosecution of the application.

Respectfully submitted,

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